

XLVII.—On the Scalidæ or “Wentletraps” of the Sea of Japan; with Descriptions of some new Species. By ARTHUR ADAMS, F.L.S. &c.

THE Japanese Islands form a portion of that great submarine chain of mountains, upwards of six thousand miles in length, which extends from the Philippine Islands on the south to the Kurile and Aleutian Islands on the north. It is therefore natural to suppose that species of Mollusca hitherto found only among the Philippine group should be discovered among the Japanese Islands, especially when the influence of the Gulf Stream is taken into consideration, which extends as far as Nippon, and even induces a current through the Korea Strait into the Sea of Japan.

I have observed in the waters of Japan numerous species of *Bullidæ*, *Cithara*, and *Mangelia*, brought by Mr. Cuming from the Philippines; and the same is the case, as we shall now show, with the *Scalidæ* or “Wentletraps.”

1. Genus SCALA, Klein.

Shell solid, turbinate or turreted; whorls ribbed. Aperture circular; peritreme with a marginal varix.

1. *Scala Pallasii*, Sow. Mon. *Scalaria*, figs. 14, 15, 16.

*Hab.* Korea Strait; 46 fathoms.

Found also by Mr. Cuming in the Philippines.

2. *Scala aculeata*, Sow. Mon. *Scalaria*, figs. 35, 36, 37.

*Hab.* Tsu-Sima; 16 fathoms.

Found by Mr. Cuming in the Philippines.

3. *Scala replicata*, Sow. Mon. *Scalaria*, figs. 23, 24.

*Hab.* Mino-Sima; 63 fathoms.

Brought by Mr. Cuming from Lord Hood's Island.

4. *Scala obliqua*, Sow. Mon. *Scalaria*, fig. 69.

*Hab.* Mino-Sima; 63 fathoms.

No locality is given by Mr. Sowerby.

5. *Scala muricata*, Kien., Sow. Mon. *Scalaria*, figs. 29, 31, 32.

*Hab.* Mino-Sima; 63 fathoms.

“A common West-Indian species.” (Sow.)

6. *Scala pulcherrima*, Sow. Mon. Scalaria, fig. 92.

*Hab.* Mino-Sima; 63 fathoms.

Found by Mr. Cuming in the Philippines.

7. *Scala rubrolineata*, Sow. Mon. Scalaria, figs. 83, 84.

*Hab.* Mino-Sima; 63 fathoms.

No locality is given by Mr. Sowerby.

8. *Scala irregularis*, Sow. Mon. Scalaria, fig. 40.

*Hab.* Mino-Sima; 63 fathoms.

Brought by Mr. Cuming from the Philippines.

9. *Scala turricula*, Sow. Mon. Scalaria, figs. 61, 68.

*Hab.* Korca Strait; 46 fathoms.

Stated by Mr. Sowerby to be found both in the Philippines and West Indies.

10. *Scala eximia*, Adams & Reeve, Zool. Voy. Sam. pl. 11. fig. 16.

*Hab.* Mino-Sima; 63 fathoms.

Found also in the Yellow Sea.

11. *Scala trabeculata*, A. Adams.

*S.* testa elevato-turbinata, imperforata; anfractibus convexis; suturis profundis; costis prominentibus, tenuibus, fimbriatis, distantibus, ad latera sinistra transversim liratis, ad suturas productis et angulatis, interstitiis trabeculis transversis prominentibus distantibus instructis; regione umbilicali lira conspicua circumcincta; apertura circulari, varice marginali lato, lamellari, dilatato, fimbriato.

*Hab.* Mino-Sima; 63 fathoms.

12. *Scala fimbriata*, A. Adams.

*S.* testa turrito-turbinata, imperforata; anfractibus 7, convexis; suturis profundis; costis lamellatis prominentibus, fimbriatis, distantibus, postice valde angulatis, interstitiis liris transversis elevatis distantibus ornatis; regione umbilicali carinula nodulosa circumcincta; apertura circulari, varice marginali lato, lamellari, fimbriato, antice producto et vix everso, postice late angulato.

*Hab.* Mino-Sima; 63 fathoms.

13. *Scala optabilis*, A. Adams.

*S.* testa pyramidato-turbinata, perforata, sordide alba, maculis irregularibus rotundis fulvis pallidis picta; anfractibus  $5\frac{1}{2}$ , convexis; suturis profundis, longitudinaliter costatis; costis tenuibus, prominentibus, distantibus, ad suturas obtusim angulatis, interstitiis

creberrime transversim striatis; apertura subcirculari, varice marginali tenui, subexpanso, everso, et umbilicum partim obtectante.

*Hab.* Mino-Sima; 63 fathoms.

This species requires to be minutely examined before all its beauty can be discovered. The pale clouded spots between the ribs and the delicate striation of the surface are its most distinguishing features.

14. *Scala elegantula*, A. Adams.

*S.* testa turrato-turbinata, imperforata; anfractibus 7, convexis, superne contabulatis; suturis profundis; costis tenuibus, distantibus, prope suturas angulatis, interstitiis valde transversim striatis; apertura circulari, varice marginali crasso, rotundato, postice oblique angulato.

*Hab.* Mino-Sima; 63 fathoms.

Most like *S. fimbriata* in form, but very much smaller; the nucleolar whorls, however, are different, showing it to be an adult shell.

15. *Scala spiralis*, A. Adams.

*S.* testa turrato-turbinata, alba; anfractibus  $6\frac{1}{2}$ , convexis, disjunctis; suturis valde profundis; longitudinaliter costata, costis prominentibus, reflexis, distantibus, prope suturas rotundate angulatis, interstitiis valde transversim striatis; anfractu ultimo soluto; apertura circulari, varice marginali crasso, expanso, antice dilatato.

*Hab.* Mino-Sima; 63 fathoms.

This elegant species resembles in form *S. obliqua*, Sow.; but it is thick and solid, and transversely striated; the ribs also are fewer and stronger. It also resembles in form *S. cochlea*; but that species is a varicose *Cirsotrema*.

16. *Scala præclara*, A. Adams.

*S.* testa pyramidali-acuminata, imperforata; anfractibus numerosis, prope suturas elevatis; suturis profundis; varicibus lamellatis distantibus replicatis, superne acute angulatis, interstitiis valde liratis, liris distantibus; apertura subcirculari; labio incrassato; labro postice dentato.

*Hab.* Korea Strait; 46 fathoms.

In form this very beautiful species somewhat resembles *S. gradata*, Hinds, from Amboyna; but the varices are thin and lamellar, and the interstices are transversely lirate.

17. *Scala liliputana*, A. Adams.

*S.* testa parva, ventricosa, globoso-conica, late umbilicata, alba; anfractibus  $3\frac{1}{2}$ , valde convexis; suturis profundis; varicibus tenuibus,

distantibus, interstitiis spiraliter transversim liratis; apertura circulari.

This charming Liliputian species most nearly resembles in form *Scala scalaris*, Linn.; but the varices are thin, and the interstices conspicuously lirate.

Subgenus *Clathrus*, Oken.

18. *Scala hexagona*, Sow. Mon. *Scalaria*, fig. 67.

*Hab.* Awa-Sima; in shell-sand.

If I am right in the identification of the species, it is also found, according to Mr. Sowerby, at Acapulco.

19. *Scala elenensis*, Sow. Mon. *Scalaria*, fig. 102.

*Hab.* Mino-Sima; 63 fathoms.

Found, if I am right in my determination of the species, also in West Columbia.

2. Genus *AMÆA*, H. & A. Adams.

Shell thin, turreted; whorls cancellated. Aperture irregular; peritreme simple, acute.

1. *Amæa magnifica*, Sow.

*Scalaria magnifica*, Sow. Mon. *Scalaria*, fig. 103.

*Hab.* Mino-Sima; 63 fathoms.

Also from China, Yellow Sea, &c.

2. *Amæa decussata*, Lamk., Sow. Mon. *Scalaria*, fig. 140.

*Scalaria cancellata*, Rumph.

*Hab.* Mino-Sima; 63 fathoms.

“Coast of Arabia,” Mr. Sowerby.

3. Genus *CIRSOTREMA*, Mörch.

Shell solid, imperforate; whorls striated or cancellated, often with irregular varices. Aperture circular; peritreme with a marginal varix.

1. *Cirsotrema sulcatum*, Sow. Mon. *Scalaria*, fig. 111.

*Hab.* Mino-Sima; 63 fathoms.

Brought also from the Philippines by Mr. Cuming.

2. *Cirsotrema bicarinatum*, Sow. Mon. *Scalaria*, figs. 113, 114.

*Hab.* Mino-Sima; 63 fathoms.

Brought also by Mr. Cuming from the Philippines.

3. *Cirsotrema suturale*, Hinds, Sow. Mon. Scalaria, fig. 120.

*Hab.* Korea Strait; 46 fathoms.

Found also by Mr. Hinds at Malacca.

4. *Cirsotrema undulatum*, Sow. Mon. Scalaria, fig. 136.

*Hab.* Korea Strait; 46 fathoms.

No locality is given by Mr. Sowerby.

5. *Cirsotrema crassilabrum*, Sow. Mon. Scalaria, figs. 115, 116.

*Hab.* Mino-Sima; 63 fathoms.

Also from the Philippines and Central America, according to Mr. Sowerby.

6. *Cirsotrema cribrarium*, A. Adams.

*C.* testa elongata, crassa, turrata, imperforata; anfractibus 7, planulatis, inferne subnodosis, longitudinaliter costatis; costis validis, distantibus, undulatis, interstitiis minutissime cancellatis quasi cribrariis; apertura ovata; labro incrassato.

*Hab.* Tsu-Sima; 26 fathoms.

Most nearly resembles *C. crassilabrum*, Sow.; but the whorls are punctate-cancellate, and the peritreme is not broadly marginate.

7. *Cirsotrema Turbonilla*, A. Adams.

*C.* testa elongata, turrata, crassa, imperforata; anfractibus 7, convexis, longitudinaliter costatis; costis crassis, undulatis, prominentibus, interstitiis crebre striatis, striis transversis, elevatiusculis; apertura late ovata; labro margine incrassato, antice vix producto.

*Hab.* Mino-Sima; 63 fathoms.

A thick-ribbed turreted species, most like *C. crassicostatum*, Gray, the locality of which is not given by Mr. Sowerby.

4. Genus *CONSTANTIA*, A. Adams.

Shell thin, ovate or turbate, imperforate; whorls decussate or cancellate. Aperture oblong; peritreme simple, acute.

1. *Constantia elegans*, A. Adams, Ann. Nat. Hist. 1860, vol. v.

*Hab.* Mino-Sima; 63 fathoms.

2. *Constantia Tantilla*, A. Adams.

*C.* testa parva, tenui, semipellucida, imperforata, albida; anfractibus  $4\frac{1}{2}$ , convexis, plicis tenuibus longitudinalibus distantibus et liris

transversis decussatis; regione umbilicali impressa; apertura sub-circulari; labio vix incrassato; labro simplici.

*Hab.* Tabu-Sima; 25 fathoms.

A small thin species with plicate whorls crossed by regular elevated transverse liræ.

5. Genus SCALIOLA, A. Adams.

Shell thin, turreted, perforate; whorls rounded, agglutinate. Aperture circular; peritreme simple, acute.

*Scaliola bella*, A. Adams, Ann. Nat. Hist. 1860, vol. vi.

*Hab.* Tabu-Sima; 25 fathoms.

An examination of fresh specimens of this little genus proves that it has the faculty, like *Helicina agglutinans* and the species of *Onustidæ*, of covering the surface of the valves with foreign bodies.

Shanghai, China,  
May 3, 1861.

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XLVIII.—*Additional Notes on some new Palæozoic Star-fishes.*  
By J. W. SALTER, Esq., F.G.S., Geol. Survey of Great Britain.

[Plate XVIII. figs. 9, 10, 11.]

*To the Editors of the Annals of Natural History.*

GENTLEMEN,

In the Notes I sent you on the Silurian Starfishes (Annals, ser. 2. vol. xx. p. 321, pl. 9) one of the most doubtful points was the true position of the long-armed genus *Protaster* (fig. 4). It had all the appearance of an *Ophiura*, and yet there was so much apparent similarity to the accompanying genera of *Asteriadæ* as to suggest the expectation that they might be found nearly allied.

A fresh set of specimens of these beautiful fossils has cleared up the point, at least so far as it shows that *Protaster* possessed the usual madreporic plate of the *Asteriadæ*. Its position, and a slightly magnified view of the plate are given in the sketch, fig. 9.

There were also some important differences, when *Protaster* was compared with the *Ophiuridæ*, in the structure of the arms themselves; for the number of plates in a circuit of the arm was six in *Protaster*, four in all ordinary *Ophiurids*. This number, indeed, is constant; or if, as in *Ophiolepis*, the upper plate be sometimes divided, this is accidental, no species being known in